WATERFOWL TOMORROW ? US Dept of Interior, Bureau of Sport Fisheries & Wildlife, Fish & Wildlife Service - GPO 1964

Excerpted from "Atlantic Flyway"

p.167 One cold September day a family of Canada geese lifted from the windswept tundra of Baffin Island and headed south. Their journey would be a long one and urgent. Lengthening nights, freezing temperatures, and snow squalls already had brought winter to their summer home in the Arctic.

No one saw them leave or noticed them as they battled the winds of Hudson Strait and the rigors of Ungava Peninsula. Off the mouth of the Povungnituk, a sharp-eyed Eskimo boy, standing quietly in the dusk, watched the family descend on motionless wings, talked down by hundreds of their kind. A brief rest, then off again, driven by instinct or habit they could not deny. The next few weeks, the family moved with the clan½ as it worked its way south along the shores of Hudson Bay and James Bay. There, hundreds of thousands of similar missions joined them. And there, too, a parting of the ways.

The destination of some was to be the Eastern Shore of Maryland or
p.168 the James River of Virginia. Some would tumble out at Lake Mattamuskeet or Gaddy's Pond in North Carolina. Our family from Baffin Island and a few thousand more will find a winter home at St. Mark's National Wildlife Refuge in northern Florida. But whatever the terminus, most of them are bound for the Atlantic Flyway along our eastern seaboard, the traditional winter home of honkers out of eastern Canada and many other kinds of gees ducks, swans, and coots from other parts of the North American Continent/

New England, New York, Pennsylvania, West Virginia, and the coastal States south to Florida, 17 in all, make up the Stateside part of the Atlantic Flyway. It covers 446 thousand square miles, about one-seventh the area of 48 States. It has a coastline of more than 7 thousand miles. From the top of Maine to the tip of Florida, the flyway is about 1,800 miles long. The greatest width is about 500 miles; the average, about 30 More than 70 million people live there, well over a third of the populati of the United States. About two-thirds live in and between Boston and Washington, a coastal strip that is becoming a continuous metropolis.

Climate and vegetation differ north to south and west to east. The North has warm summers and cold, snowy winters. The southern end is hot and humid. Snow and rain total 40 to 60 inches. North of upper New Jers fresh and slightly brackish waters usually remain frozen most winters. Spruce-fir and hardwood forests of the North give way to mangrove swamps and the Everglades of southern Florida.

The Appalachian Mountains extend through much of the flyway on the west. Waters flowing east from the mountains pass through pine and wouthern hardwood forests of the rolling Piedmont Region. The flat Coastal Plain begins at the Fall Line; longleaf, loblolly, and slash pine forests and cypress, tupelo, and sweetgum swamps are common there. Within a few hundred miles, from the crest of the Alleghenies in the Carolinas to the river swamps and marine habitats of the coast, habitats of animal life an climate are widely diverse.

The irregular coastline has hundreds of islands, bays, sounds, river estuaries, and low-lying swamps and marshes. Southward from the rocky coast of Maine, the surf shoreline becomes wide, sandy beach. Sand is replaced in southern Florida by finely ground marl, derived from the ground-up shells of coral, clams, and other marine shellfish. Also, farther south, tidal bays and estuaries become larger, and the expanse of marsh and swamp greater. Coastal habitats of o the middle and southern parts of the flyway attract the bulk of migrant and wintering waterfowl.

Although the Atlantic Flyway is populous and has more than 600 thousand miles of rural roads, it also has a surprising amount of unoccupied land. More than half is wooded; the area for hunting and fishing is considerable. Cropland occupies about 14 percent. Corn and other p.169 grains, fruit, vegetables, cotton, tobacco, soybeans, and hay are the main crops. Grazing is important. Fewer than one-fourth of the farms of the United States are here; they average about 113 acres, less than half the national average.

This flyway has more than 32 million acres of wetland habitat, 96 percent of it from Maryland south. That is more than one-third of the wetlands of the United States, but only 4 million acres, or 12 percent, is of moderate to high value for waterfowl. The figures indicate that the Atlantic Flyway is long on wetlands but short on wetland habitat for waterfowl.

About 29 million acres are inland fresh-water areas and about 3.5 million acres are coastal, fresh, and saline areas. About 14 million acr of marsh, 12 million acres of swamp, and 3 million acres of bog make up the inland fresh waters. Coastal habitats have about one-half million acres of fresh marshes and 2.5 million acres of salt marshes. One-half million acres of mangrove occur in Florida.

Roughly 10 million acres of permanent, shallow, open waters are of value to ducks and geese. Included are lakes, reservoirs, large rivers and streams, bays, sounds, estuaries, and tidal flats. Not included are thousands of farm ponds, small wooded streams and other natural areas of a few acres, some of which waterfowl use at various times.

Most of the wetland habitat has low value for waterfowl. Millions o acres are dark-water acid bog types, and sterile lakes and ponds. Sawgrass, needlerush, phragmites, cattails, and cordgrasses cover large trac Productive habitats are widely scattered and are associated usually with alkaline and brackish waters, which generally produce pondweeds, bulrushe wildrice, and other preferred duck foods in abundance. Many wetlands adjacent to upland and open-water feeding areas receive greater use by waterfowl. Having a major share of the wetlands does not assure us a maj share of the waterfowl: The Atlantic Flyway harbors scarcely 15 percent of the ducks, only 20 percent of all geese (not counting brant), and a quarter of the coot.

The story of the discovery and settlement of the Country portrays th history of the Atlantic Flyway. It is a story of pioneers determined to conquer and exploit a fertile land and its rich flora and fauna. The eastern strip was the beachhead from which battles rages between the pioneer and the land and its waters, between the pioneer and the virgin forests, the pioneer and wildlife, and native Indian tribes.

By the middle of the 18th century, most of the larger rivers supported towns and cities, and settlements sprang up in the interior. Natur waterways for a long time were the only satisfactory means of travel and communication. They provided fish, shellfish, and bird and other animal life. It was natural therefore that centers of population would build up along major watercourses. Many locations chosen for settlement were also areas of prime waterfowl habitat - but there was no need to think of that then.

p.170 The need grew for deeper channels and canals to connect watercourses, and many were built. Until railroads came, they made easier the exploitation of mineral resources, the development of industrial power, and communications generally. But they also caused major changes in the landscape. Dredging operations destroyed some habitat directly, but more important was the change that came in quality of water and the increased human activity that followed. The changes often destroyed permanently extensive beds of aquatics. In 1925, for example, Manasquan Inlet and Bay Canal were opened as part of the Inland Waterway, and the once famous Barnegat Bay and its marshes were changed from a predominantly brackish area, wher duck foods abounded, to a saline environment in which little food for duc could grow. Barnegat Bay no longer attracts the thousands of canvasbacks redheads, and other species it once did.

With rapid growth of industry, development of agriculture, mushroomi of populations, and building of great cities, major changes continued in waterfowl habitat of the flyway. In the rush of expansion, hundreds of thousands of acres of habitat disappeared. No piece of any importance ha gone unscathed.

The cutting of forests and tillage and grazing of slopes, with littl care to prevent erosion, caused tremendous losses of soil and ruined rivers, lakes, and estuaries that once were attractive to waterfowl. Much effort has been put forward in recent years to protect watershets, yet pollution from soil erosion remains serious today. ~~To provide for the~~

To provide for the need of a growing population and expanding industry for ever greater amounts of power and water and for flood contro and navigation, hundreds of reservoirs, covering more than a million acre have been built. Sometimes reservoirs help ducks. Ofteh they do not. By impounding water, they reduce flow downstream and sometimes cause increases in salinity, to the detriment of some aquatic habitats. Upstream reservoirs and the diversion of waters of the Santee River in South Carolina, for example, put an end to rice farming and eliminated thousands of acres of prime waterfowl habitat in the Lower Santee and nearby coastal areas.

Other examples are at hand of how manipulation of waterflow has changed the environment. The productive capacity for waterfowl of the Back Bay-Currituck area was once jeopardized by the Albemarle-Chesapeake Canal. Before locks were installed the canal let in too much salinity. When the barrier dunes, however, were built up they prevented occasional flooding by salt water. The periodic introduction of sea wate into fresh-water habitats has helped to maintain the brackish conditions needed for maximum production of duck food.

Major marsh and swamp-drainage projects have altered the Montezuma marshes in New York, Lake Mattamuskeet in North Carolina, and parts of

p.171 Picture, "Canada geese finding refuge and rest in a pond in North Carolina".

p.172 the Everglades areas in Florida. Less spectacular has been the disappearance of many smaller interior swamps and marshes.

The marshes of the Atlantic coast have been infested with mosquitoes the worst being the salt-marsh mosquito. At first, oil applied to standi waters effectively controlled some, but not the saltmarsh variety. Conse quently, in the early thirties, the Civilian Conservation Corps, at the request of cities and resorts, began to ditch marshes. Close to one-half million acres of coastal marsh from southern New England to Maryland were ditched and drained. Many extensive marshes in the Middle Atlantic regio were made nearly useless for waterfowl.

The coastal marshes are important not only to waterfowl,; they suppo a sizable fur resource and are important nursery grounds for some species of marine animal life. But they have been badly abused. Probably more than half of the original high-quality marsh habitat has disappeared or has been so modified as to be of low value for wildlife.

Also of great importance are the open water habitats, such as stream rivers, lakes, bays, sounds, and estuaries. They are used heavily by migrant and wintering diving ducks and many species of puddle ducks and gee

p.173 Hardly a waterway exists that has not been changed by dredging, filling, channeling, dams, canals, and diversion of waters. But perhaps the most serious man-caused problem for waterfowl is pollution.

As populations increase and congestion develops, the disposal of
p.174 wastes becomes an urgent matter. We have not handled the problem well,
for the most part, and many of the great watercourses are little better
than open sewers.

Nearly every conceivable type of pollutant material is discharged in the waters of the Atlantic Flyway. Untreated domestic sewage is the most prevalent. The rivers of southern New England, the Middle Atlantic State and Florida are most seriously affected. Many tidal bottoms in those States are closed to the harvesting of shellfish because of the possibili of infection.

Untreated wastes of industry can cause great damage and loss to fish and wildlife. Thousands of tons of organic and inorganic materials are discharged daily into the watersystems of the flyway. High on the offen ing list are discharges from pulp and paper mills, which ruin hundreds of miles of stream habitats from Maine to Florida. Washings from mining operations ruin many downstream habitats. In the coal region of Pennsylvania and WestVirginia,leakage of mine acids destroys plant and animal life along many miles of stream. Although direct kills of fish and waterfowl sometimes occur, the chief effect is to destroy habitat on which fish and waterfowl depend.

Oil pollution also has become serious. The annual loss of waterfowl by oil pollution could well exceed 100 thousand birds. Critical areas are Delaware Bay, northern New Jersey, New York, southern New England, th St. Lawrence River, and the ocean. Spectacular spillages have occurred, and losses of 5 thousand to 10 thousand birds from one spillage have not been unusual. Even greater losses may be due to unspectacular but contin ing unlawful release of oil by ships.

The effect of pesticides is a growing cause for alarm. Tremendous amounts of highly toxic insecticides have been used. Must has been used unwisely, carelessly, and unnecessarily. Some organisms that are not killed outright by the poisonsmay carry them in their body tissues. Birds that feed on them have suffered high mortality. The possible effect of the poisons on the reproductive capacity of waterfowl that have ingested sublethal amounts remains to be determined.

Lead shot kills many thousands of waterfowl each year, and the accumulation of spent shot in heavily-hunted marshes is a worrisome problem here, as elsewhere. Most species of ducks, geese, and swans are affected

Plant pests are still another hazard in the flyway. It is saddled with four introduced species that succeeded too well - water-hyacinth, waterchestnut, alligatorweed, and Eurasian watermilfoil. The first two are floating plants and may completely cover the water surface, kill submerged plants, and hamper boat travel. Alligatorweed grows on moist soil as well as over water. It is aggressive and persistent. Thousands of acres of fresh waters from the Carolinas south are choked with it and water-hyacinth. Eurasian watermilfoil grows submerged and is so prolific as to crowd out all native aquatics.

A blanket of waterchestnut once eliminated all food plants from a 4
p.175 mile stretch of the Potomac River. Even boats had difficulty getting
through. It took 20 years and several hundred thousand dollars to get
rid of the plant. Sizeable infestations occur in New York State, Vermon
and Massachusetts.

Thousands of acres of waterfowl habitats are infested with watermilfoil in New York, New Jersey, Maryland, Virginia, and Pea Island, North

Carolina. The total elimination of these invaders may not be practical, but ways are being found to reduce them locally.

Add to the factors that destroy and impair habitat still others, suc as harassment by boaters and fishermen and losses to a thriving number of predators, and one gets a discouraged outlook for waterfowl of the Atlant Flyway. The situation is not all bad, even so. Some plus factors hold out promise.

Much of the best natural habitat has been lost, it is true, but part of what remains is basically good. Losses of natural habitat are made up somewhat by loaal upland feeding areas on private and public lands in New York, Pennsylvania, Maryland, and States south to Florida. Well-develope State and Federal management areas in many places provide improved habita although they can take care of only some of the fowl, primarily Canada geese and puddle ducks. Little has been done for diving ducks.

In the midfifties nearly twice as many ducks wintered in the flyway as were present during the early sizties. We conclude that the habitat can still sustain about the same size of waterfowl population as it did in the midfifties. But that does not imply that Atlantic Flyway habitats are as big and good as they should be. More good places throughout the flyway are desirable because some localities vary year to year in the amount and kinds of foods they produce. Work to that end has been starte

Federal and state wildlife agencies have purchased 750 thousand acre for waterfowl management and have that many additional acres under long-term leaze. On these areas living conditions for waterfowl have been improved. Long range plans of the Bureau of Sport Fisheries and Wildlife and the State Fish and Game Departments include acquisitions that would nearly double the acreage held in 1962. A growing public interest in pre serving and developing recreational areas has encouraged the Federal Government and many States to plan to acquire hundreds of thousands of acres for the enjoyment of all citizens. Such recreational projects will inclu side benefits for waterfowl.

We take note, also, that new habitat is being created in programs of land and water management agencies not primarily concerned with wildlife. Many reservoirs have been built and planned. Those in farming regions will benefit waterfowl if nearby lands and waters are managed well. The agencies and services doing such work cooperate closely.

Many ponds, impoundments, and streambank improvements have been made under programs of the Department of Agriculture. Many of them have valu
p.176 to waterfowl, regardless of their chief purpose. Likewise, State Fish an Game Departments foster cooperative projects to devote private tracts to small marshes. Furthermore, the flooding of salt marshes in place of ditching and draining them is a new way to control mosquitoes that could return many acres to the use of waterfowl.

All this points up again the close relationship between the welfare of people and the existence of waterfowl. Both need water, land, space, and a place to live, rest, and rear families. But this we should bear in mind: Much of what we do not use - water, land, space - tends to be wasted. Not so if we put it to good use for the living things that also need to share our good earth. In so doing, we will find that the environment that is best for people is quite acceptable to waterfowl as well.

p.181 Canada geese of the Atlantic Flyway are produced mainly in eastern Canada. Several thousand have been raised under captive and wild conditions in the Northern States of the flyway as far south as Virginia. Man of o them are the progeny of live decoys released years ago when the use o live decoys for hunting was outlawed. Landowners and State and Federal management agencies have done a great deal on their own lands to protect and encourage these small flocks.

More than 75 percent of the wintering population occurs on or near tidewater from Kent County in Delaware to Hyde County in North Carolina. Concentrations of up to 10 thousand or more are at various inland points, such as in northwest Florida, the Santee Refuge of South Carolina, and th Gaddy's Pond area in North Carolina. Since 1950, Canadas have averaged about 400 thousand during the winter. Peak numbers have exceeded 500 thousand. The harvest in some years has been more o than 100 thousand.

Canada geese generally are well dispersed in the flyway. Efforts have been started to establish new wintering flocks in the Piedmont and upper Coastal Plain regions. Plans have been made for management areas in the Northern States in order to delay southward flights so that northern hunters may share in the harvest.

p.182 Efforts to control the distribution and movements of Canada geese carry risks as well as rewards. Careful planning is especially important in northern localities where an ample acreage of grain crops could delay migration and hold many geese through the fall and even into winter. Improper management of goose areas in States, such as New York and Pennsylvania, could nullify the management program for the whole flyway. Suc problems are not likely to be serious in New England, where grain farming is limited.

p.184 In colonial America, waterfowl and other wildlife made possible the survival of settlers by providing food and other needs for living. Later commercial hunting became a major business, and markets of big coastal cities were well stocked with wild ducks and geese. Then followed develo ment of sport hunting, and a number of sites in the flyway became well known.

Names like Merrymeeting Bay, the Cape, Great South Bay, Barnegat Bay Susquehanna Flats, Back Bay, Chesapeake Bay, and Currituck became synonymous with the ultimate in waterfowling in minds of duckhunters everywhere In days long ago, they rivaled the best in the world. Some are still amo the best locally, but duck hunting in the Atlantic Flyway is not what it used to be.

It seems unlikely that even the best of technical skills can restore this flyway to its past richness. Seventy million persons and all they need for existence cannot live in a limited area without changing it. We cannot return to the primitive old days, and not many of us want to.

But we cannot be entirely pessimistic. Some breeding grounds in thi flyway are still wild and remote o and send forth their fall flights. Besides, the flyway may even be less subject to exploitation than others; i seems to be approaching a point of stability, and stability is important waterfowl. People who live here, furthermore, have a growing awareness t ducks don't just happen. They want to understand and provide for the nee of waterfowl. It is not too much to expect then, that conservationists a other citizens will join efforts to manage things wisely enough to offset the impact of still more people and so attain a stability of the kind tha will insure a valuable resource for generations to come.

---C. Edward Addy.